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ABSTRACT

The spontaneous speech of a Mohawk-speaking boy was recorded from age 2;10 to 4;1. Analysis of this speech indicated that certain verbal prefixes are acquired earlier than suffixes. The pronominal prefix of nouns, on the other hand, enters late. Yet, before the appearance of any nominal affix, the child already uses a pronominal possessive as a free form. Its status is that of a noun. The pattern of verb-affix acquisition appears to be language particular. The pattern of affix acquisition in general conforms to the well-known principle that irregular forms are mastered later than regular ones. Data also stress the importance of low frequency forms. These might mark important transitional periods within a child's speech development. Language acquisition research that focuses mainly on quantitative material might thus ignore important strategical clues. Overgeneralization in a child's speech is not only indicative of capacity to differentiate, but it may also reveal the manner in which new linguistic information is processed. (Author/JB)

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MORPHOLOGICAL DEVELOPMENT IN MOHAWK

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Since the classic "wugs" article by Jean Berko Gleason in 1958, a large number of studies on morphological development in children's language acquisition has appeared, general theoretical discussions have been published, and there are well-established techniques for study in this area (Cazden 1968, Brown 1973, Slobin 1973, MacWhinney 1974, and Argoff 1976). The languages investigated have included such different types as English, Latvian, Finnish, Hungarian, German and Slavic languages, but no study has appeared on morphological development in a language with a highly complex morphology including inflectional prefixation and suffixation, noun incorporation, subject and object marking and case marking within the verb and a system of pronominal categories which includes two feminine genders, inclusive and exclusive first person plurals and duals. Mohawk (Northern Iroquoian) is such a language. In this paper I shall present the results of our study of language acquisition in a young native speaker of Mohawk.

This study focuses on verb morphemes in Mohawk and the way they are acquired in spontaneous speech at the telegraphic and short sentences stage over a period of 15 months. For an introductory grammatical description of Mohawk see the Appendix. In the first part of this paper, the emphasis will be placed on a clarification of methodological issues such as, for example, sampling techniques, acquisition criteria, MLU as a cross-linguistic developmental measure. In the second part of the paper the Mohawk data will be discussed with reference to some acquisition strategies in speech production (e.g. Ingram 1974, Brown 1973, and Slobin 1973). The final section will deal with the sequential development of pronominal prefixes. I will discuss perceptual saliency, frequency, semantic information content, and overgeneralisation in relation to the Mohawk data which question one of Slobin's (1973) operating principles.

Procedure

Subject, and methods of investigations

Over a period of 15 months I periodically recorded the spontaneous speech of a Mohawk boy, Bert, from age 2;10 to 4;1, during 1-2 hours sessions every five weeks in the first eight months and every eight weeks during the remaining months. The recording sessions started in July 1976 and were completed in October 1977. Until December 1976, Bert was an only child. Dressing, washing, meals and snacks, play with toys, looking at picture books with mother and adult visits constituted his main activities during the observation periods. Often at the beginning of recording sessions his mother would ask him to enumerate objects, body parts, clothes, etc. to which she pointed. After a while, however, the mother would fall back into every day type of interactions with her son. After the birth of a baby sister in December 1976, new activities were added to those listed above such as assisting his mother in nursing the baby sister, changing diapers, wanting to hold her or even to converse with her. In order to keep the boy's speech as natural as possible, I usually refrained from interacting with him during the recording sessions.

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Some tapes were transcribed by the investigator and an informant, others by an informant and a linguistics student under supervision of the investigator. Everything said by or to the child was transcribed. The speech of mother and adult visitors was transcribed in slightly modified standard Mohawk orthography, as described in Footnote 3. Deviations from standard forms were numerous. There seems to be a marked difference between younger Mohawk speakers (the boy's mother was below 30 years of age), mostly bilingual, often with English as their dominant language, and older Mohawk speakers who feel more comfortable in Mohawk than in English². Bert's speech was transcribed in Mohawk orthography with phonetic notes when necessary (vowel length, intonation pattern and vowel quality). A form was considered to be acquired (mastered) (Brown 1973) if it occurred in adult form nine out of ten times during one session.

Methodological problems

There were numerous problems that made recording, transcription and analysis rather difficult. Recording a child in an everyday situation implies that occasional background noises such as other voices, noises of the child playing with objects, boiling water, etc. might interfere with the child's speech and render it partially or entirely incomprehensible. Speech thus rendered unintelligible was discarded from the speech sample. Even with this selective procedure as well as double-checking of material, we encountered occasional phonetic difficulties. Vowel qualities and word final sounds (mainly the glottal stop) sometimes were difficult to perceive. Certain parts of the transcription are thus more approximate than others. All of us who have been involved in the analysis of early spontaneous speech sampling have experienced such uncertainties, and have tried to find ways to reduce them.

Clearly, transcription without interpretation in a foreign language context is incomplete. In the absence of the mother the interpretation of certain non-standard forms (child language) often caused problems. Either the form was dropped, or if at all possible, was reconstructed by taking into consideration all the linguistic and extralinguistic cues present. At times I returned with interpretation problems to the reserve in order to consult the child's mother. Even the mother often hesitated or just did not know. At an early age it is very difficult if not impossible to surmise a child's intentions. Of course, transcribing and interpreting a child's speech implies that the researcher passes final judgement on the child's intended meaning.

If recording and transcribing are hazardous, analysis is even more so. Mohawk is a highly inflectional language. At the telegraphic stage for instance, units retained did not always correspond to the root (content word) of the nominal or verbal utterance. It was extremely difficult to segment Bert's speech into morphological units. Thus, MLU, a rather general measure of linguistic development, was not applied to my speech sample. Let me illustrate the segmentation difficulties with examples (1) to (4), at age 2;10:

- | | Bert (B) | Adult form (A) (segmentation of surface forms) |
|---------|--|---|
| (1) (i) | kó:wa
his/*her possession
It is his/hers | akó: + wv ³ / raó: + wv
"her" + "possess." / "his" + "possess."
It is hers / It is his |
| (ii) | yekó:wa
his possession
It is his | |

For Bert, is ko in (1) ko:wa "it-is-hers" an abbreviation for ako "her", or is it part of the root? We have found kó:wa / yekó:wa standing for raó:wv "it is his". This makes me believe that, at this stage, ko:wa functions as one morpheme that alternates with other morphemes such as, for example, yekó:wa. A few final examples follow without commentaries.

- | | (B) | (A) |
|-----|---------------|--|
| (2) | lotésena RĒ** | ro + yo?tv̄ + ?ser + u***
"he" + "work" + purp. + stative
He has gone to work |
| (3) | yah tóhsena | yah tha + sa + ro?tv̄ + ?ser + a?
"not" neg + "you" + "work" + purp. + punct.
You are not going to work. |
| (4) | hv tóhsena | hv sa + yo?tv̄ + ?ser + a?
yes "you" + "work" + purp. + punct.
Yes you are going to work |

How would one segment the above utterances (2) to (4), and what is their MLU?

At least one other researcher, Bambi Schiefflin, working on another non-Indo-European language, told me in a private conversation at Berkeley (June 1979) that she was unable to use MLU in her Kaluli data. It thus appears that the use of MLU, as defined by Brown (1973), is not a very effective crosslinguistic measure.

This also raises the question of the status of the "word" when used as a measure of utterance length (MLU). Let us suppose that (2) would have the translation equivalent of a two-word sentence "he work" (child language). Calling it a one-word sentence in Mohawk certainly would not do justice to the morphological complexity of the verb. Nevertheless, at an early age, the child him/herself may use the utterance as a single semantic item. The term "word" in current developmental literature thus needs to be redefined if we intend to use it as a measure in crosslinguistic data.

* /: variants used interchangeably

** RE: repetition (all other non-adult forms spontaneous)

*** r and l are free variants in St. REgis Mohawk. l is used in the transcription of the child version because of its frequent use.

Observations about Word Forms

At 2;10 Bert produced what appeared to be telegraphic utterances (Brown and Bellugi 1964). He retained utterances containing from one to four syllables. In Mohawk as in English (Smith 1973, Ingram 1974) and in French (Pupier 1977) it was observed that reductions at an early age are phonologically determined (consonant cluster reduction, length constraints etc). Only later on do morphological factors intervene.

Which parts of an utterance does a child retain and actually reproduce? What are the phonological constraints to which they are subject? In Mohawk, Bert made use of at least two types of strategies in the initial months. One concerned the beginning of words, the other the stressed part of words. The first strategy could be stated as follows: "The word has to start (phonologically) with a consonant, as in (5)-(9), or with a stressed vowel, as in (10).

- | (B) | (A) |
|----------------|--|
| (5) kó:wa | akó: + wv
"her" + "possession"
It is hers |
| (6) káu | akáuha
her (unanalyzable) |
| (7) né:kas | o + hné:k + anus
nominal + "liquid" + "fresh, cold"
pronoun
Fresh, cold water |
| (8) sé:la RE | v + ye + thi + yat + kv + ?sér + a?
fut. + trans- + "I-her" + "person" + "see" + purp. + punct.
locative
I will see her |
| (9) kí:l/kí:la | v + k + hnek + í:r + a?
fut. + "I" + "liquid" + "drink" + punct.
I will drink |
| (10) éha | é:rhar
dog (unanalyzable) |

The second strategy Bert used for awhile concerned the part of the word that carried the stress. Before discussing this, let me briefly explain stress patterns in Mohawk. Polysyllabic words usually have the stress placed on the penultimate syllable, or, variably, on the ultimate or antepenultimate syllable. The form which Bert retained was usually the stressed part of the word. This often corresponded to the latter part of the word, i.e. the content word (9) or part of it (6), plus a partial prefix (5) or suffix (7). But this was not always the case. In (8), for example, the word sé:la used by the boy to express the concept "see" corresponds to a suffix used for two inflectional morphemes in the adult grammar. Bert put this word type to good use in many different contexts. In one session alone 13% of the predicate phrases contained sé:la, "see".

For English, Brown (1973) has suggested that the units retained are content words (those bearing stress) such as nouns and verbs, though they usually lack inflections like the tense and the plural. Function words such as articles and prepositions, are seldom used at the telegraphic stage, according to Brown, because they are less important semantically and therefore do not receive the same stress as nouns and verbs. Thus, for Brown, lack of stress and semantic content account for the omission of inflections and function words at this stage. His analysis accounts well for data from English-speaking children.

In Mohawk, Bert likewise paid attention to stress. But since the stressed elements in Mohawk differ from those in English, and there are not always neat one-to-one correspondences between stress and content morphemes, it should not be surprising that the units retained in the boy's speech differed from those retained by English-speaking children.

Slobin (1973) has suggested that children at an early stage in their development adhere to a number of operating principles regardless of their language background (see also Slobin, 1978). One of the principles children seem to use is as follows: "Pay attention to the ends of words". My data, nevertheless, contained many examples similar to (6) and (9) where the stressed part of the word was retained while the word ending was omitted. A better strategy for Mohawk would be: "Pay attention to the stressed part of the word". This would be compatible with the observations made of English, that only stressed units are retained. In the case of Brown's English data these would usually be content words. In my data, the stressed units could be parts of content words with or without inflectional affixes or inflections alone with the original meaning changed. Only rarely is there a one-to-one correspondence between adult forms used by the child and the meaning(s) attributed to these forms. For those not in direct contact with the child, this makes child language very difficult to understand out of context and sometimes even in context.

At a later session, at age 3;5 a definite change towards morphologically conditioned retention was observed in the boy's speech. 'At this point the rule "Words never start with an unstressed vowel" had disappeared. The utterances tended to be longer, though occasional omissions were still common.

Prefixes versus Suffixes

The search for a universal set of language learning devices still simultaneously fascinates and puzzles the developmental psycholinguist. Research in this area relies heavily on insights achieved by Slobin (1973). His operating principles still serve as a guideline in crosslinguistic investigations. In the preceding section, one of these principles was examined briefly in the discussion of which morphological elements are retained in the child's speech at the earliest stages of acquisition.

In this section I shall present some evidence pertinent to Slobin's (1973) proposal that the end of words (suffixes) are perceptually more salient than the beginning of words (prefixes) and therefore acquired earlier. However, unlike English or French, where verbs take more suffixes than prefixes, Mohawk verbs take more prefixes than suffixes.

Verb: ± prepronominal prefixes	+ pronominal prefix	+ stem	± suffixes
((negation)(modality) etc.)*		(reflexive)	((case)
		(noun root(s))	(aspect)etc.)
		verb root(s)	

*(): optional

It is to be noted that the only obligatory suffix is the pronominal prefix of the verb. Its constant occurrence renders the verb beginning more accessible than the verb ending⁴, even though at times if preceded by prepronominal prefixes the pronoun is not in the initial position in the verb and thus not perceptually salient. And, contrary to Slobin's operating principle, verb prefixes in Bert's speech emerged earlier than suffixes. Frequency (rather than perceptual saliency) appears to be responsible for this early acquisition. Or are the verb beginnings in Mohawk semantically more informative than the verb endings? As a final hypothesis, are "late" language learners (such as Bert) using slightly different principles than early learners?

Let us now look at noun acquisition. Nominal affixes in Mohawk are optional:

Noun: ± pronominal prefix	+ stem	± suffix
((possessive/nominal)etc.)	noun root(s)/	(nominal/locative)etc.)
	nominalized verb	

Nominal suffixes, as in Bulgarian (Gheorgov 1908), appeared somewhat earlier in Bert's speech than the prefixes of nouns and verbs. Here then is support for Slobin's operating principle. The relevant data are to be found in detail in Feurer (1980). Was the end of the noun more salient? Or was the semantic content of the nominal ending given preference over that of the nominal beginning? The suffixes that appeared early were locatives and occasional nominal markers⁵. Pronominal possessive prefixes were not used at an early age although they did appear as free forms at about the same time as the suffixes.

Before exploring the prefix-versus-suffix issue in greater detail, a careful study of prefix and suffix acquisition is required. I shall limit myself in the following section to study of the prefix, in particular the pronominal prefix within the verb.

Pronominal Acquisition Sequences

In this study I am particularly interested in the person markers and the order in which they appear in the child's language. Mohawk distinguishes three types of person markers: the subjective, objective and transitive. The subjective markers refer to the subject in the verb (e.g. (22), (23), (24)); the objective markers refer to the object or patient of the action or state of the verb (e.g. (20) and (25)); and the transitive markers refer to the agent and patient of the action or state described by the verb. This section will cover the following pronominal acquisition sequences and strategies: the development of first person markers between 2;10 and 3;3; further pronominal acquisitions including the first person marker by 3;5; remaining pronominal difficulties such as the transitive pronoun of verbs showing an incorporation of a noun by 3;8; overgeneralizations of inflections at 3;5 and 4;1; and difficulties with gender and feminine pronominal variants at 4;1. The plural pronouns are not discussed because of their lateness and infrequency of appearance.

Development of first person markers

By age 2;10, Bert's usual way of referring to himself as agent was by his own personal nickname Pam as in (11) and (12).

- (11) Pam kí:la
Pam drink
Pam would like to drink

- (12) Pam siáke
Pam go-out
Pam wants to go out

Once, though, the boy used a free pronominal form equivalent to "moi" in French while referring to himself. (Bert also used this form in single-word utterances).

- (13) í?i sokéy
me sit-down
I am sitting down

At the same time the pronominal form, "me", was used by Bert quite frequently within the nominal phrase to refer to himself as possessor (14, 15).

- | | (B) | (A) |
|------|--------------------------------|--|
| (14) | í?i éha
me dog
My dog | akitsé:nv é:rhar
my-animal dog
My dog |
| (15) | í?i kéya
me doll
My doll | ka + yaht + ú:ni
"I" + "person" + "make"
My doll |

Notice that possession was referred to by a free morpheme. In adult speech the form would be "me my-doll" i.e. "my doll". Since its function is that of a noun, í?i "me" thus represents the possessor.

By 3;3 pronominal referents (agents) occurred consistently in the boy's speech. At the same time, the use of the nickname "Pam" was dropped. í?i, "me", was still used within the verb paradigm. Simultaneously a new form appeared, the first person prefix, as in (17).

- | | | |
|------|-------------------------------|--|
| (16) | í?i aní:na
me buy
I buy | wa? + k + hní:n + u
aorist + "I" + "buy" + stative
I have been buying it |
| (17) | kyó?teh/tyó?teh
I work | wa? + k + yó?t + e?
aorist + "I" + "work" + punct.
I worked |

Further acquisitions of the pronominal markers

By 3;5 word length has increased, and with it Bert's morphological awareness as we shall see in (20) et al. Moreover, pronominal prefixes in full or partial standard form appear with increasing frequency at that time.

- (B) (A)
- (18)(i) waki:la wa + k + í:ru + ?
 (ii) waké:lq aorist + "I" + "say" + punct.
 (iii) kewakilah I said (it).
- (19)(i) wahíle wa + ?i + í ru + ?
 (ii) i:le aorist + FI* + "say" + punct.
 She said (.i).
- (20) loyó?teh lo + yó?t + e?
 "he" + "work" + punct.
 He is working.
- (21)(i) aháíleh n + a + ha + yér + e?
 (ii) ahá:yereh parti. + aorist + "he" + "do" + punct.
 (iii) nahá:ye What did he do?
 (iv) nahá:yereh
- (22)(i) niyekéha ni + h + ak + yér + h + a
 (ii) neikiha parti. + "he" + reflexive + "do" + purp. + hab.
 What is he doing?
- (23)(i) tskéha ni + sh** + ak + yér + h + a
 (ii) ashakyéha parti. + "you" reflexive + "do" + purp. + hab.
 What are you doing?
- (24) í:le RE í + l + ehl + e?
 epenthetic + "he" + "want" + punct.
 vowel
 He wants it.
- (25) akonó:lu yo + kvnó:r + u
 FZ*** + "raining" + stative
 It is raining.

In (21) the pronominal form *ha* "he" carries the stress and occurs in its full form. In (22) the variant *h* "he" (*ha+h/___V*) is part of an unaccented syllable. In (22)(i), *ye* "she", is used instead of *h*. The child seems to be confused on gender. In (24), the second person singular is there, even within an unstressed syllable. At 3;5 it seems that first and second person pronouns are fully mastered, but the third person only partially. Gender still causes problems. Other substitutions were observed at this age. In (25) the objective pronoun *yo* "it/she" (FZ) is replaced by the third person possessive *ako* "her" used with nouns in Mohawk. Could this prefix *ako* have been used as a feminine pronoun or as undifferentiated pronominal slot filler ((25) and (26))? We found the same form -- or maybe *ak o* belonging to the root? -- within a transitive pronominal position in (26). Notice the resemblance between the first person possessive *ak* and the pronoun below. Is the child overgeneralizing the first person or the possessive pronoun? In (26) this remains a question of morphemic identification (segmentation).

* FI: feminine indefinite
 ** sh: dialectal variant
 *** FZ: feminine zoic pronoun

- | | |
|----------------------|------------------------|
| (B) | (A) |
| (26) yah te akonúhwa | yah te + ku + norúhkwa |
| "not" negative | + "I-you" + "love" |
| I don't love you. | |

As I have already mentioned, verbs take different types of pronouns in Mohawk. The transitive verb always occurs with a transitive pronominal prefix that refers to its agent and patient. These fused forms are mostly unanalyzable and offer irregular units as ku "I-you" in (27). Due to these morpho-syntactic and semantic complexities I expect the transitive referent to take longer to be acquired. In fact, at 3;8 Bert is still struggling with the transitive prefix.

Transitive pronouns and noun incorporation

Noun incorporation (a noun incorporated into a transitive verb stem) is another complexity that at 3;8 is still not mastered. A large number of different morphemes have to be aligned within one word: prepronominal prefixes, pronominal transitive prefix, verb stem (noun root, verb root) and suffixes.* The parts retained are the pronominal prefix (non-standard form) as in (27), or parts of it as in (28), the noun plus or minus verb root and the suffix.

- | | |
|-------------------|--|
| (B) | (A) |
| (27) kana?talátso | yo + te + na?tal + áts + u |
| nominal | FZ + semi-reflex. + "bread" + "burn" + stative |
| prefix | The bread is burning (toasted bread). |
| (28) atyítas | ra + tyitya + k + s |
| he | he + "flower" + "eat" + habitual |
| He is flowering | He is eating flowers |

By age 4;1 the singular transitive pronouns (with the exception of the gender) of noun incorporated verbs were mastered, but verb stem formation still remained a problem.

Overgeneralization

Many studies of language development suggest that a child's tendency to overgeneralize inflections after stage I (Brown 1973) reflects a change in the child's cognitive processes. The cognitive change, though a complex one, appears to be a change from dealing with objects and events as undifferentiated wholes to dealing with them as analyzable entities that are rule-governed. That is, the child is beginning to analyze objects, actions and events into their respective properties.

We know for certain that a child has started to differentiate morphological patterns, for example, when overgeneralized forms such as "singed" for "sung" or "foots" for "feet" appear. Overgeneralization, if taken to the extreme, results in a regular linguistic system. The tendency to overgeneralize varies from child to child. In Bert's speech overgeneralizations were very rare. For example, (18)(iii) ke "I" is placed in word initial position as a redundant form. There might have been an early hypothetical rule that pronouns appear word initially. Yet, by 3;5 there remains little evidence for this hypothesis (18iii, 19ii). With certainty I can infer from (18iii) that Bert has started to differentiate ke first person singular.

* The prepronominal prefixes and the suffixes are optional.

Another overgeneralization of the form ke "I" was observed at 4;1 (i.e. 30)

- | | |
|----------------|------------------------|
| (B) | (A) |
| (29) kevyv:teh | ke + weyv:t + e? |
| | "I" + "know" + punct. |
| | I know (how to do it). |

ke in (39) occurs as a full form as does te in (26). The rule ke/te→k/t/ V is ignored in these two instances. Though the two variants are usually used correctly these two examples again could imply a certain morphological awareness by the learner. For ako in (37) and (38) see above discussion. Overgeneralizations were very infrequent in my Mohawk data. Whenever they occurred, they were always transient. Labov (personal communication 1979) qualified such a child who makes few overgeneralizations as a fast learner. Helga Feider (personal communication 1979) observed frequent and persistent overgeneralization with one of her children, who was otherwise considered to be a quick and capable learner. It appears that the frequency of overgeneralization does not imply speech as much as it implies the way new information is processed. This hypothesis, however, deserves further investigation. Bert overgeneralized rarely: one or two overgeneralized forms in some instances appeared but would be replaced immediately by a new form. Unfortunately such rare forms might easily escape the observer. Yet, in a child's speech, such infrequent forms (i.e. "ako" in (25) and (26)) might be important developmental milestones. They might imply that new patterns are emerging, a result of new strategies employed. Notice also that the two overgeneralized forms in (26) and (29) occur with verbs infrequently used during the recording periods. Language usage, the usefulness of a form in this case, might be another factor causing overgeneralization. The verb "to love" (26) was used only four times in the session at 3;5 and each time its form differed significantly from the adult form. Yet (25) "it is raining" was a high frequency form during the entire observation period. A more likely factor for overgeneralization in (27) appears to be a language particular one, the formal and semantic complexity of its referent as discussed above. The other example in (29), the verb "to know how to," i.e. savoir in French, fits the generalization made by MacWhinney (1974) who observed overgeneralization in words infrequently used by adults (input).⁶ "To know how to", was used by the boy for the first time during the session at age 4;1. It certainly makes sense that the boy would attempt to make this form fit a regular pattern.

The Gender and their variants

By 4;1 first and second person singular pronouns are mastered.⁷ One of the remaining problems is that of gender. The third person masculine and feminine are frequently confused. See (30)-(32) below.

- | | |
|-------------------|------------------------------------|
| (B) | (A) |
| (30) wahakóhe? | wa + ʔe + kóh + e? |
| <u>he</u> | aorist + FI + "get" + punct. |
| | She is going to get it. |
| (31) waʔkheʔró:ri | wa + hi + ró:ri + ? |
| I-her | aorist + "I-him" + "tell" + punct. |
| | I told him |
| (32) nahá:leh | n + a + ʔé + yer + e? |
| <u>he</u> | part + aorist + FI + "do" + punct. |
| | She did (it). |

The many variant forms of the feminine gender cause further difficulties. In Mohawk each person marker appears in three different forms, as subject, object or transitive verb marker, and each one of these basic forms is subject to morphological constraints. An added complexity is the two feminine forms. The feminine indefinite is used when referring to family members, or feminine persons with whom a close rapport has been established. It also is used when referring to a person whose gender is unknown. The feminine zoic is used to refer to teachers, bosses, or people not much liked, and to female animals. These two pronominal forms, in the singular, possess the greatest number of variants. The acquisition of Mohawk supports Slobin's (1973) hypothesis that the greater the number of variants, the more acquisition will be slowed down.

Conclusion

It is evident from my Mohawk speech sample that, for at least one learner, certain verbal prefixes are acquired early. Prefixes in the Mohawk verb paradigm, in particular the pronominal one seem to be more accessible for a Mohawk child than suffixes because of their frequent occurrence and the type of semantic content they convey. With nouns, though, the strategy seems to be reversed. The pronominal prefix (possessive) enters late (after the locative suffix, for example). Yet, before the appearance of any nominal affix, the child already uses a pronominal possessive as a free form. Its status is that of a noun. The operating principle I observed in the acquisition of Mohawk verb affixes appears to be language particular rather than universal (Slobin 1973). With the noun such evidence is yet to be found.

The most frequent affixes in Mohawk are the obligatory pronominal prefixes. I have shown with a relatively limited yet representative sample that they enter the child's speech early and within a certain sequence. Let me summarize this sequence:

- 1) The obligatory verbal pronominal prefix appears first. (In a later article I shall discuss the acquisition of the partitive, negative and modality prefixes, all affixes that appear after the pronominal prefix).
- 2) The subjective and objective person markers are acquired before the transitive pronouns.
- 3) The first and second person pronouns enter earlier than the third person. The gender of the third person is differentiated later.
- 4) The feminine singular pronoun enters after the masculine for two reasons:
 - a) there are two different feminine forms with different ranges of uses (language particular problem)
 - b) each of these forms has a set of variants. (I still have to investigate which variant is used most frequently and in which context).

It is well known that the more variants a form possesses the longer it takes for a child to acquire them. In other words my data conform to a general principal: irregular forms are mastered later than regular ones. (Slobin, 1973).

My data have also stressed the importance of low frequency forms. They might mark important transitional periods within a child's speech development. Language acquisition research that focuses mainly on quantitative material might thus ignore important strategical clues. Overgeneralization in a child's speech, however, is not only indicative of his/her capacity to differentiate, but it may also reveal the manner in which new linguistic information is processed.

In a further paper I intend to enlarge on the acquisition of modality and aspect, the first being a prefix and the latter a suffix. It seems that in my Mohawk data, modality is given preference over aspect. Why do verbal prefixes occur early in spite of their complexity? Perhaps another question needs to be further investigated: "Is the order of acquisition linked with the part of the word (prefix or suffix) that is semantically more pertinent to the child?"

Footnotes

1. This paper was written while I was a visiting scholar at Stanford University, March -July 1979. I would like to express my appreciation for the helpful comments of Professors E. Clark, C. Ferguson and H. Feider on early drafts of this paper and the editorial assistance of Wendy Greene in the final version. This research was partially supported by research funds from the Université du Québec à Montréal and the National Museum of Man in Ottawa, Canada.
2. Most Mohawk children of parents below thirty now speak English as their first language. At the time, Bert was the only available child under four years of age who was a native speaker of Mohawk.
3. Mohawk phonology and orthography. In Mohawk, the consonant phonemes are: t, k, ʔ, ts, s, h, n, r, y, and w. There are also two peripheral phonemes p and m which are of foreign origin. The vowel phonemes comprise oral vowels: i, e, a, o; and nasal vowels: $\tilde{u}$ and $\tilde{\lambda}$. In addition, there are phonemic features such as length, high tone and falling tone. The transcription used in this study is based on the above phonemic symbols with the exceptions of ʔ, $\tilde{u}$, $\tilde{\lambda}$, and $\text{'}^{\text{'}}$ which are transcribed respectively as ʔ, u, v, and ' ; in accordance with the Mohawk orthography which is currently in use, we shall mark the stressed vowel without differentiating the high from the falling tone. There are relatively few minimal pairs contrasting the two tones. Length is marked with a colon : .
4. Inaccessability of suffixes in the Mohawk verb can be explained in different ways. Let us take for example the aspectual suffix $e\text{?}/\text{?}$
 - a) in verbs with an antepenultimate stress, there is the tendency to omit the final suffix as for example, in (21)(i) and (iii) and (24). The deleted form in each case is the punctual aspect $e\text{?}$
 - b) if the verb takes the punctual aspect variant ? , often it is deleted or h is substituted for it. In 12 forms $e\text{?}/\text{?}$, the punctual aspect, was deleted 7 times and eh/h substituted 5 times:
5. The emergence of early nominal suffixes at 2;10:

núsku	ka	+	núhs	+	ku
	pronominal	+	"house"	+	"in"
	prefix				
tó:sele	rao	+	ʔsér	+	e
	"his"	+	"car"	+	nominal suffix

We found only one locative in our data. The nominal suffix could be explained in terms of perceptual saliency.

6. The verb "to know how to" is seldom used in Mohawk when speaking with children. There are reasons to believe that this is a culturally rather than linguistically determined phenomenon.
7. When and in which order do the pronominal plural forms appear? A few dualic forms are being used for the first time at 4;1. Why they are exclusively dualic forms we do not know yet.

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Appendix

Basic Mohawk Grammar. (For further reading on Mohawk grammar consult Bonvillain; Deering and Delisle; and Michelson.)

Word Order. Mohawk is an SVO language shown by the unmarked word order in (1) and (2).

- | | | | |
|-----|--------------------|------------|--------|
| (1) | S | V | O |
| | érhar | waʔoká:riʔ | takó:s |
| | dog | it-bit-it | cat |
| | The dog bit a cat. | | |

- | | | | |
|-----|--------------------|------------|-------|
| (2) | tako:s | waʔoká:riʔ | érhar |
| | cat | it-bit-it | dog |
| | The cat bit a dog. | | |

In conversations, the word order varies greatly. New information in the form of a verb (4) or a noun (1,2,3,5) is usually placed at the beginning of the utterance. The grammatical function of a noun, subject (S) or complement (O), is indicated more often by the pronominal prefixes of the verb than by the word order itself.

- | | | | |
|-----|----------------|-------------|------------|
| (3) | O | S | V |
| | swasýn | ní:ʔi* | rinú:weʔs |
| | George | partitive-I | I-like-him |
| | I like George. | | |

- | | | |
|-----|----------------|--------|
| (4) | V | O |
| | rinú:weʔs | swasýn |
| | I-like-him | George |
| | I like George. | |

- | | | |
|-----|------------------|-------------|
| (5) | S | V |
| | swasýn | rakinú:weʔs |
| | George | he-likes-me |
| | George likes me. | |

The pronominal prefix ri "I-(to)-him" in the predicate rinú:weʔs "I like him" indicates that the subject is the first person singular (ní:ʔi in (3)), and the object, the third person masculine singular swasýn in (3) and (4). In (5) swasýn takes on the role of the subject as indicated by the pronominal prefix rak, meaning "he-(to)-me".

Morphology. Three lexical types comprise the mohawk morphology: the verb, the noun and the particle. The verb in Mohawk is the main source of information. Each verb contains pronominal prefixes that refer to the agent and/or patient. Other markers are the aspect, mode, and case. Location, repetition, negation, and number further modify the predication. The verb contains four possible classes of morphological components that occur in the following positional order:

* $\frac{n(e)}{ne+n} \frac{i:ʔi}{i:ʔi} \rightarrow \frac{ní:ʔi}{n} V$, ne contracted before a constituent starting with a vowel.

- (i) prepronominal prefixes (optional): negation, partitive prefix, location, modality, etc.
- (ii) pronominal prefix (obligatory): subjective, objective, or transitive
- (iii) verb stem (obligatory): reflexive, (incorporated) noun root(s) (patient), verb root(s)
- (iv) verb suffixes (optional): instrumental and benefactive case, aspect, attributives.

These morphological components are subject to co-occurrence rules. For example, the aorist, future or conditional prefix always co-occurs with the punctual suffix (cf(6)).

In (6), we shall illustrate a verb with an incorporated noun, and in (7) a verb with a simple verb root.

- (6) wa?katervnáyvhne?
- | | | | | | | | |
|--------|------|-----------------|---------|--------------------|-------------|---------------|---------|
| wa? | +k | +ate | +rvn | +a | +yvh | +ne | +?* |
| aorist | +"I" | +semi-reflexive | +"song" | +epen-thetic vowel | +"deli-ver" | +pur-positive | +punct. |

I am going to church.

- (7) tá:re?
- | | | | | |
|--------------|---------|-------|---------|---------|
| t | +wa? | +ro | +e | +?* |
| cis-locative | +aorist | +"he" | +"walk" | +punct. |
- He is walking toward us.

Nouns are simpler in their internal structure than verbs. They consist of a noun-stem, a pronominal prefix that refers to its designated person or object, and a nominal suffix. The suffixed morphemes specify the location, the number, the condition, etc. The noun morphemes are ordered as follows:

- (i) pronominal prefix: refers to object or person designated, and the number (does not appear on some nouns)
- (ii) noun stem: single or compound noun root or nominalized verb
- (iii) nominal suffix: noun suffix, augmentative, diminutive, locative, number, decessive, etc. (does not appear on some nouns).

The noun construction is illustrated in (8) and (9):

- (8) kaná:ta
- | | | |
|--------------------------|-------------|------------------|
| ka | + nat | + a |
| neuter pronominal prefix | + "village" | + nominal suffix |
- Village

* Some of these morphemes are subject to a rather complex set of morphophonological rules.

- (9) akenaktá:ke
 ake + nakt + a + ke
 possessive + "bed" + epenthetic + locative
 pronominal vowel
 prefix

On my bed.

The simplest and most restricted morphological type is that of the particle. Its internal structure is in most cases unanalyzable. A particle usually occurs alone, or more rarely as compound, or as phrase. Their semantic and syntactic significance is yet relatively unknown. We know though that within the discourse, they act as utterance referents, connectors and modifiers. Within the utterance, they indicate relationships between the verb and the noun. Spatial and temporal, as well as other information, can be obtained in this manner.

We shall illustrate below the two types of particles: (i) particles that modify, at the phrase level, either the noun or the verb; (ii) particles that act, beyond the phrase level, as utterance modifiers, connectors, coordinators, subordinators and thematizers.

(i)

The verbal particle sótsi modifies the verb in (10).

- (10) sótsi rahnekí:rha
 too-much he-drinks-liquid
 He drinks too much.

ne is a nominal particle (nom) that indicates the definiteness of the modified noun:

- (11) to nithó:yu ne •satshé:nv
 how partitive-he-is-old nom. your-animal
 How old is your animal?

(ii)

The particle kv (Q) indicates a yes-no interrogative in the surface structure and thus acts as an utterance modifier:

- (12) k'v:tho kv vséhseke?
 here Q you-will-walk-about-again
 Are you going to stay here?

The káti functions as a discourse connector, relating the preceding utterance event with that of the following one:

- (13)St* tho nitya?tó:tv? tsi ní:yot
 there partitive-my-body-is-a-kind that partitive-it-is-like
 I look like
- ne roskvrhaké?teh
 nom war-club-bearer (male)
 a male
- Q. káti nutyé:rv wahsatenú?kare?
 therefore partitive-it-is-a-matter you-cut-your-hair
 Therefore, why did you have your hair cut?

*St: statement